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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,781	09/20/2005	Stefan Frenzel	P/2107/278	4925

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EXAMINER	
NGUYEN, COLETTE B	
ART UNIT	PAPER NUMBER
1793	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,781	FRENZEL ET AL.	
	Examiner	Art Unit	
	COLETTE NGUYEN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/5/09*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claim 1-4, 6-12, 15, 16, 18-22, 27, 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanders (US6,656,287) in view Schultheiss("Processing of Sugar Beets with Pulsed-Electric fields. IEEE Transactions on Plasma Science, Vol. 30, No.4, Aug 2002).

3. Regarding claim 1 Sanders discloses a process system to produce sugar from plant materials such as sugar cane, sugar beets and chicory but he does not specify using electroporation. The key concept of the Sanders is the necessity to raise the pH up to 12.5pH of the extractant after diffusion process (called preliming step) to enable certain non-sucrose substances contained in juices to decompose and to reach their respective iso-eletric point. In various conventional juice process systems, it may be desirable to first utilized base to raise the pH of juice prior to a subsequent process step. (Cole 3, ln 50-60, col 4, ln 3-18). Schultheiss on the other hand, teaches a technique using electroporation (it is a well known process used to the inactivation of bacteria in laboratories) on the large scale for the production of nourishment from food plants, such as sugar beets which can be extracted at lower temperature by electric pulse treatment, resulting in appreciable energy savings. It would have been obvious for

one of ordinary skill in the art at the time of the invention to combine the teaching of Schultheiss of electroporation for sugar beets with the teaching of Sanders of alkaline treatment of the extracted liquid from biological materials after diffusion process and apply them to treat the plant materials to achieve better extraction yields at lower temperatures, and savings in processing costs by minimizing the use of extracted solvents which have to be either evaporated, treated or recycled and less energy. (Schultheiss pg 1547-1549 and Sanders Col.3 ,ln.45-49) .

4. Regarding claim 2, Schultheiss teaches a method as claim 1, wherein the biological material in step (a) is subjected to a high voltage field in a conductive medium (Schultheiss : " *High voltage pulses with amplitudes of up to 300kV were created with the help of a six-stage low impedance Marx generator")*

5. Regarding claims 3, 4 Schultheiss teaches a method as claim 1 wherein, in step (b) the separation of the cell juice from the biological material is effected by mechanical loading, and wherein mechanical pressurization of the biological material is always less than 2 Mpa. Schultheiss teaches cold pressing, which is a screw press with 32 bar pressure for 15mn. It would have been obvious for one of ordinary skill in the art to design a screw conveyor to handle gently the plant materials to minimizing the juice loss. (pg 1549).

6. Regarding claim 6. Sanders in view of Schultheiss disclose a method as claim 1 wherein, in step (b), the biological material is supplied with at least one auxiliary substance.(Sanders, col,3, ln45-48)

7. Regarding Claim 7, Sanders disclose a method as claim 1, wherein step (c) is carried out at a temperature of from 0-65C. (Sanders, Col.4, ln,38-40," *the clarification and purification or refining is undertaken at a temperature of between about 30 degrees Centigrade to about 40 degrees Centigrade").*

8. Regarding claim 8. Schultheiss discloses a method as claim 1, wherein the biological material comprises at least one of sugar beet and sugar beet chips. (Schultheiss:" *The standard procedure of sugar production from beets consists of carving the fruits into cossettes and subsequently extracting the juice from these cossettes..").*

9. Regarding claim 9. Sanders discloses a method as claim 1 wherein the biological material comprises chicory. (Sanders :" *the diffusion process, the milling process, other processes that remove juice from plant material, or bring plant juice into aqueous solution, result in a juice containing sucrose, non-sucrose substances and water…may include all manner of plant derived substances and non-plant derived substances…).* It would have been obvious for one of ordinary skill in the art at the time of the invention to include chicory as it is also a plant material wherein the juice is found to be useful for health.

10. Regarding claim 10 and 11. Schultheiss discloses a device for isolating ingredients from biological material according to the method as claim1, said device comprising one appliance for electroporation, one full screw extractor arranged between the appliance for the electroporation and the extractor. (Schultheiss, pg 1548. "Experimental apparatus"). Wherein the full screw is designed as a conveyor screw and wherein a first section of the screw which is designed for receiving the material is formed at a lower point, and a second section of the screw which is designed for receiving the material is formed at an upper point, of a gradient which exist between

said first and said second sections,.(Schultheiss. Fig1, 2). The inlet of the screw conveyor is at the low end and the discharge end is at the other end of the screw in an inclined position to save space and to feed the extractor hopper.

11. Regarding claim 12. Sanders teaches to use lime to adjust the pH during purification of the juice, ie the lime has to be metered to the extract. (Sanders, col 3, ln,52).

12. Regarding claim 13. See claim 3 above.

13. Regarding claim 15, Sanders discloses a method as claimed in claim 6 wherein the auxiliary substance is at least one of lime and milk of lime (Sanders, Col 5, ln, 41-45).

14. Regarding claim 16, See claim 7 above.

15. Regarding claim 18. Sanders discloses a process system to produce sugar from plant materials such as sugar cane, sugar beets and chicory but he does not specify using electroporation. The key concept of the Sanders is the necessity to raise the pH up to 12.5pH of the extractant after diffusion process(called preliming step) to enable certain non-sucrose substances contained in juices to decompose and to reach their respective iso-eletric point. In various conventional juice process systems, it may be desirable to first utilized base to raise the pH of juice prior to a subsequent process step. (Cole 3, ln 50-60, col 4, ln 3-18). Schultheiss on the other hand, teaches a technique using electroporation (it is a well known process used to the inactivation of bacteria in laboratories) on the large scale for the production of nourishment from food plants, such as sugar beets which can be extracted at lower temperature by electric

pulse treatment, resulting in appreciable energy savings. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teaching of Schultheiss of electroporation for sugar beets with the teaching of Sanders of alkaline treatment of the extracted liquid from biological materials after diffusion process and apply them to treat the plant materials to achieve better extraction yields at lower temperatures, and savings in processing costs by minimizing the use of extracted solvents which have to be either evaporated, treated or recycled and less energy. (Schultheiss pg 1547-1549 and Sanders Col.3 ,ln.45-49) . The teachings are obvious of the instant claim

16. Regarding claim 19. Schultheiss in view of Sanders discloses a method as claim 18 with argument as claim 2 above.

17. Regarding claims 20, 21, 22. see claim 3 and 4.

18. Regarding claims 25 and 26. See claim 15 above.

19. Regarding claims 27, 28. see claim 7.

20. **Claims 5, 14, 17 ,23-24** are rejected under 35 USC 103 as unpatentable over Sanders in view of Schultheiss as applied to claim 1, 10 and 18 and further in view of Hunt et al.(4,323,007). Both Schultheiss and Sanders do not discuss the details of the feeding screw despite that both do use the screw conveyors for the process of extracting liquids or sugars out of plant materials such as sugar beets. Hunt, on the other hand discloses a method of extraction of juice from fruits using a perforate extracting screw. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the extracting screw of Hunt in the method of Schultheiss as

modified by Sanders to provide an efficient extracting method with a compact design to save costs in energy.

21. Regarding claims 5, 14, 23 and 24 Hunt specifically teaches wherein step (b) takes place in a screw (Hunt Abstract " *the use of the a screw press having a feed screw with a very gradual continuous slope of the body of the feed screw such that the fruit is gently compressed as it passes through the screw press")*, Hunt discloses that the juices of a fruit or plant materials can be collected in transition in the screw conveyor since it has a perforated trough. It would have been obvious for one or ordinary skill in the art to specify the perforated screw conveyor trough to maximize the recovery of the juices.

22. Regarding claim 17 Sanders in view of Schultheiss disclose a device as claimed in claim 10 above, and further in view of Hunt, wherein the full screw is threaded and at least one of an outer jacket of said screw and said screw threads is perforated. (Hunt, col 3, ln, 6-9.)

Response to Arguments

1. Applicant's arguments filed 15th of January 20090 have been fully considered but they are not persuasive. As mentioned in claim 1, the teaching of Sanders, especially the alkaline treatment (the step of adding base as called by Sanders) to the biological material up to pH 12.5 is key to improve the yield of extraction as non-sucrose materials and other components that are not stable to decompose. This teaching in view of the teaching of Schultheiss in applying electrical pulse called,electroporation technique to open the cells of the materials, encompass the claimed invention.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is (571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Mayes can be reached on (571)-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLETTE NGUYEN/
Examiner, Art Unit 1793

CN
March 12, 2009

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793